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CLAIMS

[Claim(s)]

[Claim 1] The horizontal and perpendicular timing circuit which drives a solid state image sensor, and the electronic iris control circuit which judges the quantity of light which carries out incidence to said solid state image sensor with the output signal of said solid state image sensor, The shutter speed control section which controls the quantity of light which carries out incidence to said solid state image sensor by controlling shutter speed according to the output signal of said electronic iris control circuit, The change circuit which has two or more camera sections which have the sampling hold circuit which stores temporarily the output signal of said solid state image sensor, and chooses one output signal among the output signals of two or more of these camera sections, The digital disposal circuit processed so that the output signal of this change circuit can be displayed on a display, The period which is equipped with the display which displays the output signal of this digital disposal circuit, and uses a camera, and said solid state image sensor, An electrical potential difference is always supplied to said horizontal and perpendicular timing circuit, said electronic iris control circuit, and said shutter speed control section. Camera equipment constituted so that an electrical potential difference might be supplied, only when the camera section equipped with this sampling hold circuit was chosen as said sampling hold circuit by said change circuit.

[Claim 2] Camera equipment according to claim 1 which made the mechanical iris control circuit which judges the quantity of light which replaces with an electronic iris control circuit and carries out incidence to said solid state image sensor with the output signal of a solid state image sensor, and was made into the mechanical iris mechanical component which controls the quantity of light which carries out incidence to said solid state image sensor by replacing with the shutter speed control section and controlling shutter speed according to the output signal of said mechanical iris control circuit.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to camera equipment.

[0002]

[Description of the Prior Art] In recent years, in the field of car electronics, in order to lose a dead angle as one means which raises the safety of a vehicle, the mounted camera has been introduced. Here, use of the conventional mounted camera has mainly been used for one monitor as one camera as a car back check camera.

[0003] (a) of drawing 3 is equipped with the circuit which controls the camera into a camera, and is the configuration of the mounted unified camera. (b) of drawing 3 is the configuration of the mounted camera which divided the camera section and the control section.

[0004] In drawing 3, 31 is a camera and 32 is a cable which transmits a signal to a monitor 33 from a camera. 34 is power-source Rhine for supplying an electrical potential difference to a monitor, and 35 is an earth line which grounds a monitor. Moreover, 36 is back detection Rhine which checks existence of a back body, when a vehicle retreats.

[0005] Moreover, 37 is the head section which mediates signal propagation with the camera section and the control section.

[0006] The circuitry in such a mounted camera is shown in drawing 4. Horizontal / [which drives a solid state image sensor 11 and a solid state image sensor 11 in the camera section] vertical timing circuit 12 as shown in drawing 4. The electronic iris control circuit 13 which outputs the signal which judges the quantity of light from the output of a solid state image sensor 11, and controls an electronic shutter. It has the camera section which consists of the shutter speed control section 14 which controls the shutter speed of a solid state image sensor 11 with the output of an electronic iris control circuit, and a sampling hold circuit 15 which holds electrically the output signal of a solid state image sensor 11. It consists of monitors 16 which project the output from the digital disposal circuit 15 processed so that the output signal of this camera section can be displayed on the monitor which is a display.

[0007] the above mounted cameras -- setting -- two or more -- the camera section -- the method of a preparation, and the bottom -- a case -- forming [of the camera section] the monitor equivalent to a number -- if -- the facility itself becomes large and is not desirable still more desirable economically. Then, as shown in drawing 5, the approach of changing the output of two or more camera sections with a switch was taken.

[0008] The 1st camera section 1 which becomes the camera section from a solid state image sensor 11, horizontal / vertical timing circuit 12, the electronic iris control circuit 13, and the shutter speed control section 14 and the sampling hold circuit 15 in drawing 5. The 2nd camera section 2 which consists of the same configuration as the 1st camera section, and consists of a solid state image sensor 21, a horizontal and a perpendicular timing circuit 22, an electronic iris control circuit 23, and the shutter speed control section 24 and the sampling hold circuit 25. With the change which chooses one output signal among the output signals of the 1st camera section 1 and the 2nd camera section 2 It consists of the change circuit 3 which supplies an electrical potential difference only to the selected camera section, a digital disposal circuit 4 which processes the output signal of the change circuit 3, a monitor 5 which projects the output from a digital disposal circuit 4, and a power source 6 which supplies an electrical potential difference to

the camera section.

[0009]

[Problem(s) to be Solved by the Invention] However, with such a configuration, since it is energizing only in the camera section in use, when changing a camera, turbulence of an image is produced.

[0010] That is, in order to supply a power source to a switch change and coincidence at the camera section if a switch is changed, and it is going to project an image on coincidence mostly when changing a switch from the camera section in a drive condition to the camera section to which the power source is not supplied, since the amount of reflected lights of a photographic subject of incident light, i.e., the amount to the camera section, was in the condition which is not adjusted, it became excessive incidence or the amount of too little incident light, and the image screen was in disorder. Moreover, in energizing to all cameras, the turbulence of an image has the problem which consumes the power beyond the need, although not generated.

[0011] While this invention is made in view of such a conventional trouble, and displaying a monitor by one set and reducing power consumption, it aims at offering the mounted camera which abolishes turbulence of an image and changes an image.

[0012]

[Means for Solving the Problem] In order to attain this purpose the camera driving gear of this invention The horizontal and perpendicular timing circuit which drives a solid state image sensor, and the electronic iris control circuit which judges the quantity of light which carries out incidence to said solid state image sensor with the output signal of said solid state image sensor, The shutter speed control section which controls the quantity of light which carries out incidence to said solid state image sensor by controlling shutter speed according to the output signal of said electronic iris control circuit, The change circuit which has two or more camera sections which have the sampling hold circuit which stores temporarily the output signal of said solid state image sensor, and chooses one output signal among the output signals of two or more of these camera sections, The digital disposal circuit processed so that the output signal of this change circuit can be displayed on a display, The period which is equipped with the display which displays the output signal of this digital disposal circuit, and uses a camera, and said solid state image sensor, An electrical potential difference is always supplied to said horizontal and perpendicular timing circuit, said electronic iris control circuit, and said shutter speed control section. said sampling hold circuit — being alike — only when the camera section equipped with this sampling hold circuit was chosen by said change circuit, it considered as the configuration which supplies an electrical potential difference.

[0013]

[Function] Even if it connects two or more camera sections to one monitor by such configuration, turbulence of the image which changes the camera section and is produced according to the bad alignment of the quantity of light in the case can be prevented.

[0014]

[Example] Hereafter, it explains, referring to a drawing about one example of this invention. In addition, the same sign is described about the same configuration as the conventional example, and explanation is omitted.

[0015] In drawing 1, the electrical potential difference is always supplied to solid state image sensors 11 and 21, horizontal / vertical timing circuits 12 and 22, the electronic iris control circuits 13 and 23, and the shutter speed control sections 14 and 24.

[0016] Moreover, the change circuit 3 is constituted so that an electrical potential difference may be supplied only to the sampling hold circuit chosen while choosing one output signal of the sampling hold circuits 15 and 25. In the above configurations, the actuation is explained below.

[0017]

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TECHNICAL FIELD

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PRIOR ART

[Description of the Prior Art] In recent years, in the field of car electronics, in order to lose a dead angle as one means which raises the safety of a vehicle, the mounted camera has been introduced. Here, use of the conventional mounted camera has mainly been used for one monitor as one camera as a car back check camera.

[0003] (a) of drawing 3 is equipped with the circuit which controls the camera into a camera, and is the configuration of the mounted unified camera. (b) of drawing 3 is the configuration of the mounted camera which divided the camera section and the control section.

[0004] In drawing 3, 31 is a camera and 32 is a cable which transmits a signal to a monitor 33 from a camera. 34 is power-source Rhine for supplying an electrical potential difference to a monitor, and 35 is an earth line which grounds a monitor. Moreover, 36 is back detection Rhine which checks existence of a back body, when a vehicle retreats.

[0005] Moreover, 37 is the head section which mediates signal propagation with the camera section and the control section.

[0006] The circuitry in such a mounted camera is shown in drawing 4. Horizontal / [which drives a solid state image sensor 11 and a solid state image sensor 11 in the camera section] vertical timing circuit 12 as shown in drawing 4. The electronic iris control circuit 13 which outputs the signal which judges the quantity of light from the output of a solid state image sensor 11, and controls an electronic shutter, It has the camera section which consists of the shutter speed control section 14 which controls the shutter speed of a solid state image sensor 11 with the output of an electronic iris control circuit, and a sampling hold circuit 15 which holds electrically the output signal of a solid state image sensor 11. It consists of monitors 16 which project the output from the digital disposal circuit 15 processed so that the output signal of this camera section can be displayed on the monitor which is a display.

[0007] the above mounted cameras — setting — two or more — the camera section — the method of a preparation, and the bottom — a case — forming [of the camera section] the monitor equivalent to a number — if — the facility itself becomes large and is not desirable still more desirable economically. Then, as shown in drawing 5, the approach of changing the output of two or more camera sections with a switch was taken.

[0008] The 1st camera section 1 which becomes the camera section from a solid state image sensor 11, horizontal / vertical timing circuit 12, the electronic iris control circuit 13, and the shutter speed control section 14 and the sampling hold circuit 15 in drawing 5. The 2nd camera section 2 which consists of the same configuration as the 1st camera section, and consists of a solid state image sensor 21, a horizontal and a perpendicular timing circuit 22, an electronic iris control circuit 23, and the shutter speed control section 24 and the sampling hold circuit 25, With the change which chooses one output signal among the output signals of the 1st camera section 1 and the 2nd camera section 2 It consists of the change circuit 3 which supplies an electrical potential difference only to the selected camera section, a digital disposal circuit 4 which processes the output signal of the change circuit 3, a monitor 5 which projects the output from a digital disposal circuit 4, and a power source 6 which supplies an electrical potential difference to the camera section.

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EFFECT OF THE INVENTION

[Effect of the Invention] Also when a power source is supplied to the mounted camera systems when checking the back of a car according to this invention, and it changes from the 1st camera to the 2nd camera, the turbulence of the image by the amount adjustment fault of incident light is not produced [as explained above,].

[0023] Therefore, displeasure with an image can be canceled and the next action can be immediately taken by the ability beginning to project an image immediately. Moreover, since it is energizing to some mounted camera systems, there is also little power consumption and it ends.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, with such a configuration, since it is energizing only in the camera section in use, when changing a camera, turbulence of an image is produced.

[0010] That is, in order to supply a power source to a switch change and coincidence at the camera section if a switch is changed, and it is going to project an image on coincidence mostly when changing a switch from the camera section in a drive condition to the camera section to which the power source is not supplied, since the amount of reflected lights of a photographic subject of incident light, i.e., the amount to the camera section, was in the condition which is not adjusted, it became excessive incidence or the amount of too little incident light, and the image screen was in disorder. Moreover, in energizing to all cameras, the turbulence of an image has the problem which consumes the power beyond the need, although not generated.

[0011] While this invention is made in view of such a conventional trouble, and displaying a monitor by one set and reducing power consumption, it aims at offering the mounted camera which abolishes turbulence of an image and changes an image.

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MEANS

[Means for Solving the Problem] In order to attain this purpose the camera driving gear of this invention The horizontal and perpendicular timing circuit which drives a solid state image sensor, and the electronic iris control circuit which judges the quantity of light which carries out incidence to said solid state image sensor with the output signal of said solid state image sensor, The shutter speed control section which controls the quantity of light which carries out incidence to said solid state image sensor by controlling shutter speed according to the output signal of said electronic iris control circuit, The change circuit which has two or more camera sections which have the sampling hold circuit which stores temporarily the output signal of said solid state image sensor, and chooses one output signal among the output signals of two or more of these camera sections, The digital disposal circuit processed so that the output signal of this change circuit can be displayed on a display, The period which is equipped with the display which displays the output signal of this digital disposal circuit, and uses a camera, and said solid state image sensor,

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OPERATION

[Function] Even if it connects two or more camera sections to one monitor by such configuration, turbulence of the image which changes the camera section and is produced according to the bad alignment of the quantity of light in the case can be prevented.

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EXAMPLE

[Example] Hereafter, it explains, referring to a drawing about one example of this invention. In addition, the same sign is described about the same configuration as the conventional example, and explanation is omitted.

[0015] In drawing 1, the electrical potential difference is always supplied to solid state image sensors 11 and 21, horizontal / vertical timing circuits 12 and 22, the electronic iris control circuits 13 and 23, and the shutter speed control sections 14 and 24.

[0016] Moreover, the change circuit 3 is constituted so that an electrical potential difference may be supplied only to the sampling hold circuit chosen while choosing one output signal of the sampling hold circuits 15 and 25. In the above configurations, the actuation is explained below.

[0017] First, solid state image sensors 11 and 21 incorporate the reflected light of a photographic subject with the output signal of a horizontal and the perpendicular timing circuits 12 and 22, it changes into the amount of the charge corresponding to this quantity of light, and this is made into an output signal. The electronic iris control circuits 13 and 23 change the amount of this changed charge into an electrical potential difference, and the amount of reflected lights of a photographic subject is judged with that electrical potential difference. When the electronic iris control circuits 13 and 23 judge [many] the quantity of light of a photographic subject, an excessive charge is discarded so that the stored charge of solid state image sensors 11 and 21 may become the optimal amount, and this is made into an output signal. This discarded charge is inputted into the shutter speed control sections 14 and 24 as a signal with which the electronic iris control circuits 13 and 23 judged the quantity of light, electronic shutter speed is changed, and it changes into the optimal quantity of light condition.

[0018] Thus, by the electronic iris control circuit, the amount of reflected lights of a photographic subject is adjusted, and it is made the normal image.

[0019] Here, since horizontal / vertical timing circuit which drives the solid state image sensor of a camera, an electronic iris control circuit, and the shutter speed control section are energizing, they can prevent turbulence of the image by the lack of adjustment of the quantity of light which the amount of incident light to the camera section is always adjusted, and is produced at the time of a camera change.

[0020] When it carries out to two or more cameras, for example, two cameras, thus, each solid state image sensors 11 and 21 of the 1st camera section 1 and the 2nd camera section 2, The horizontal and the perpendicular timing circuits 12 and 22 which drive solid state image sensors 11 and 21, The electronic iris control circuits 13 and 23 which output the signal which judges the quantity of light from the output of solid state image sensors 11 and 21, and controls an electronic shutter, The shutter speed control section containing the shutter speed control circuit which controls the shutter speed of solid state image sensors 11 and 21 with the output of the electronic iris control circuits 13 and 23, Since the amount of incident light of the 1st camera section 1 and the 2nd camera section 2 is always adjusted by always supplying the power source to 14 and 24, turbulence of the image screen by powering on for outputting a change or a camera image is lost, and the image turbulence arrester of a mounted camera is obtained.

[0021] In addition, as shown in drawing 2, the mechanical iris control circuit 13 which outputs the signal which replaces with an electronic iris control circuit, judges the quantity of light from the output of a solid state image sensor 11, and controls a mechanical shutter, and the effectiveness same also as a mechanical iris mechanical component which replaces with the shutter speed control section and controls

the shutter speed of a solid state image sensor 11 with the output of a mechanical iris control circuit can be acquired.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The block diagram of the camera equipment in one example of this invention

[Drawing 2] The block diagram of the camera equipment in one example of this invention

[Drawing 3] The block diagram of the conventional mounted camera

[Drawing 4] The block diagram of conventional camera equipment

[Drawing 5] The block diagram of conventional camera equipment

[Description of Notations]

1 1st Camera Section

2 2nd Camera Section

3 Change Circuit

4 Digital Disposal Circuit

5 Monitor

11 21 Solid state image sensor

12 22 A horizontal and perpendicular timing circuit

13 23 Electronic iris control circuit

14 24 Shutter speed control section

15 25 Sampling hold circuit

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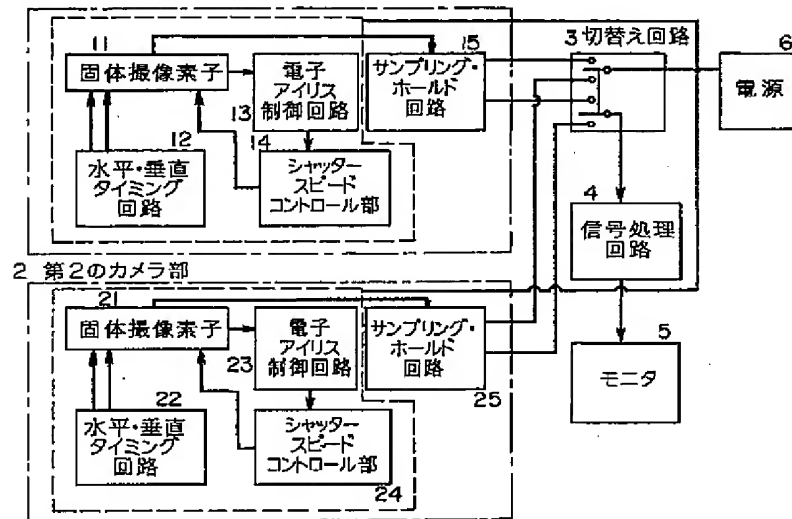
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DRAWINGS

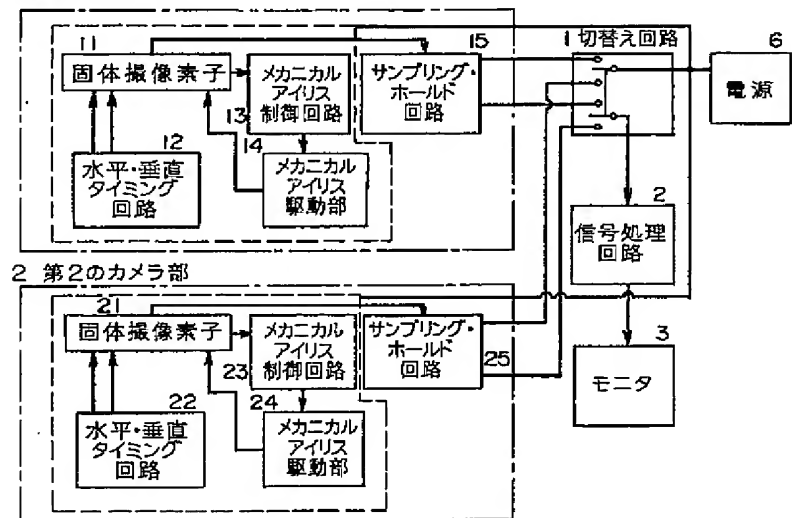
[Drawing 1]

1 第1のカメラ部



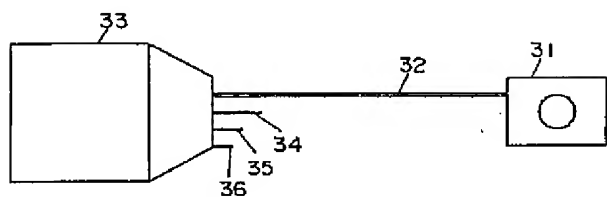
[Drawing 2]

1 第1のカメラ部

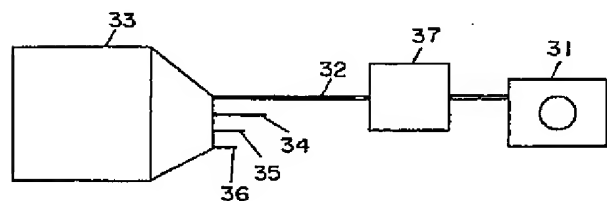


[Drawing 3]

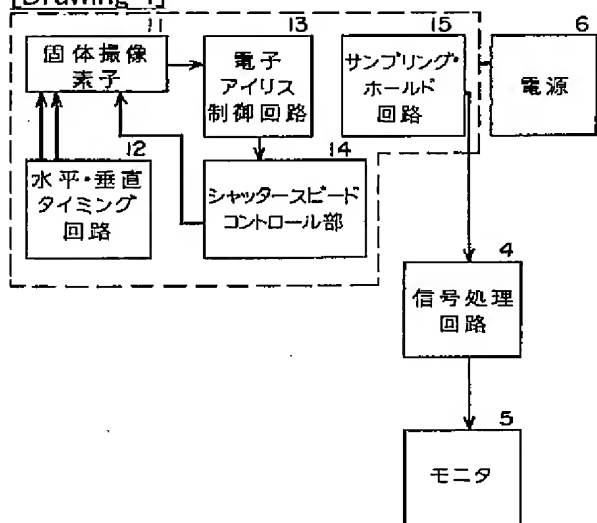
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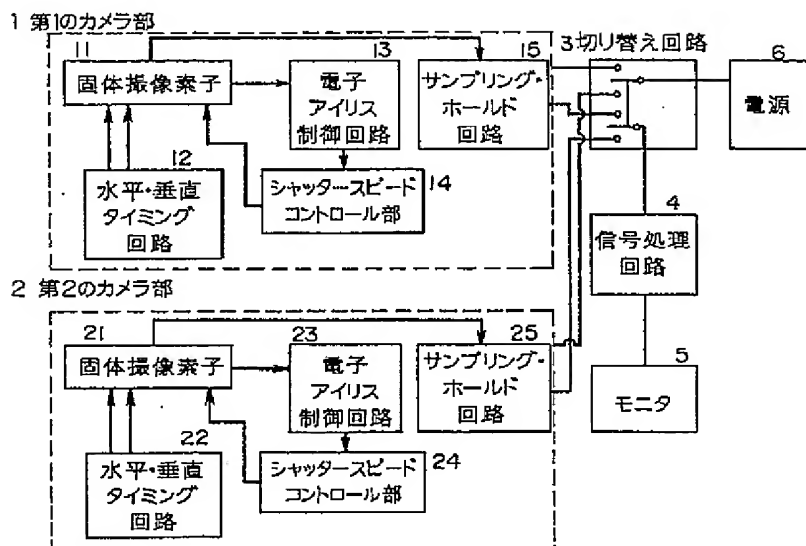
(b)



[Drawing 4]



[Drawing 5]



[Translation done.]

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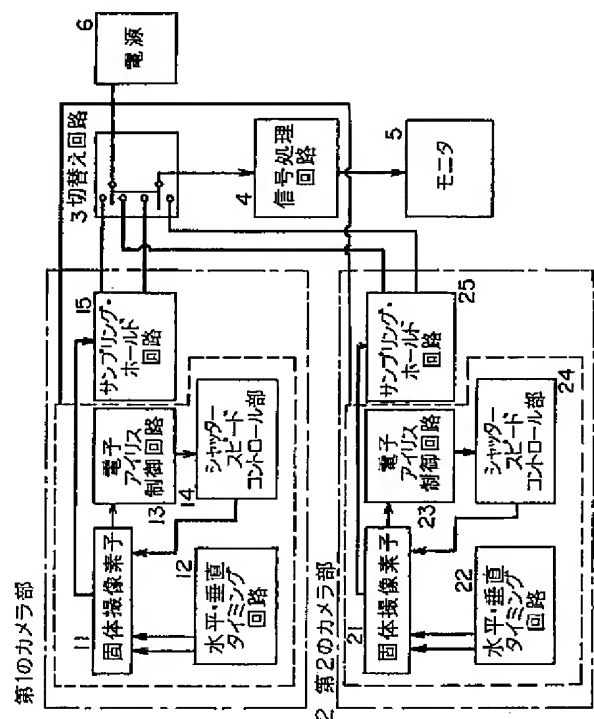
(74) 代理人 弁理士 小鍛冶 明 (外2名)

(54) 【発明の名称】 カメラ装置

(57) 【要約】

【目的】 表示装置を1台のみ用いることで、消費電力を削減するとともに、画像の乱れをなくして画像の切替えを行うことを目的とする。

【構成】 固体撮像素子11、21と、水平・垂直タイミング回路12、22と、電子アイリス制御回路13、23と、シャッタースピードコントロール部14、24と、サンプリング・ホールド回路15、25とを有するカメラ部1、2と、切替え回路3と、信号処理回路4と、モニタ5とを備え、カメラを使用する期間、固体撮像素子11、21と、水平・垂直タイミング回路12、22と、電子アイリス制御回路13、23と、シャッタースピードコントロール部14、24とには常に電圧を供給し、サンプリング・ホールド回路15、25にはこのサンプリング・ホールド回路15、25が備えられているカメラ部が切替え回路3により選択された時のみ電圧を供給する構成としたものである。



【特許請求の範囲】

【請求項1】 固体撮像素子を駆動する水平・垂直タイミング回路と、前記固体撮像素子の出力信号により前記固体撮像素子に入射する光量を判断する電子アイリス制御回路と、前記電子アイリス制御回路の出力信号に応じてシャッタースピードを制御することで前記固体撮像素子に入射する光量を制御するシャッタースピードコントロール部と、前記固体撮像素子の出力信号を一時記憶するサンプリング・ホールド回路とを有するカメラ部を複数有し、この複数のカメラ部の出力信号のうち一方の出力信号を選択する切替え回路と、この切替え回路の出力信号を表示装置に表示できるよう処理する信号処理回路と、この信号処理回路の出力信号を表示する表示装置とを備え、カメラを使用する期間、前記固体撮像素子と、前記水平・垂直タイミング回路と、前記電子アイリス制御回路と、前記シャッタースピードコントロール部とは常に電圧を供給し、前記サンプリング・ホールド回路にはこのサンプリング・ホールド回路が備えられているカメラ部が前記切替え回路により選択された時のみ電圧を供給するように構成したカメラ装置。

【請求項2】 電子アイリス制御回路に代え固体撮像素子の出力信号により前記固体撮像素子に入射する光量を判断するメカニカルアイリス制御回路とし、シャッタースピードコントロール部に代え前記メカニカルアイリス制御回路の出力信号に応じてシャッタースピードを制御することで前記固体撮像素子に入射する光量を制御するメカニカルアイリス駆動部とした請求項1記載のカメラ装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明はカメラ装置に関するものである。

【0002】

【従来の技術】近年、カーエレクトロニクスの分野では、車の安全性を高める一つの手段として死角をなくすために車載カメラが導入されてきている。ここで、従来の車載カメラの利用は主に車両後方確認カメラとしてモニタ1台にカメラ1台として使われてきた。

【0003】図3の(a)はカメラの中に、そのカメラをコントロールする回路を備え、一体化した車載カメラの構成である。図3の(b)はカメラ部とコントロール部とを分けた車載カメラの構成である。

【0004】図3において、31はカメラであり、32はカメラからモニタ33に信号を伝送するケーブルである。34はモニタに電圧を供給するための電源ラインであり、35はモニタをアースするアースラインである。また36は車が後退した時に後方の物体の存在を確認するバック検知ラインである。

【0005】また37はカメラ部とコントロール部との信号伝搬を仲介するヘッド部である。

【0006】このような車載カメラにおける回路構成を図4に示す。図4に示すようにカメラ部には固体撮像素子11と、固体撮像素子11を駆動する水平・垂直タイミング回路12と、固体撮像素子11の出力から光量を判断し電子シャッターを制御する信号を出力する電子アイリス制御回路13と、電子アイリス制御回路の出力で固体撮像素子11のシャッタースピードをコントロールするシャッタースピードコントロール部14と固体撮像素子11の出力信号を電氣的に保持するサンプリング・ホールド回路15とからなるカメラ部を有し、このカメラ部の出力信号を表示装置であるモニタに表示できるように処理する信号処理回路15からの出力を映すモニタ16から構成されている。

【0007】以上のような車載カメラにおいて、複数個カメラ部を備えようとした場合、カメラ部の数に相当するモニタを設けるのでは経済的に望ましくなく、さらに設備自体も大きくなり好ましくない。そこで図5に示すように、複数個のカメラ部の出力をスイッチにより切替える方法がとられていた。

【0008】図5において、カメラ部には固体撮像素子11、水平・垂直タイミング回路12、電子アイリス制御回路13、シャッタースピードコントロール部14とサンプリング・ホールド回路15とからなる第1のカメラ部1と、第1のカメラ部と同じ構成からなり、固体撮像素子21、水平・垂直タイミング回路22、電子アイリス制御回路23、シャッタースピードコントロール部24とサンプリング・ホールド回路25とからなる第2のカメラ部2と、第1のカメラ部1と第2のカメラ部2との出力信号のうち一方の出力信号を選択する切替えとともに、選択されたカメラ部にのみ電圧を供給する切替え回路3と、切替え回路3の出力信号を処理する信号処理回路4と、信号処理回路4からの出力を映すモニタ5と、カメラ部に電圧を供給する電源6から構成されている。

【0009】

【発明が解決しようとする課題】しかしながらこのような構成では使用中のカメラ部のみにしか通電していないためにカメラを切り替えるときに画像の乱れを生じる。

【0010】つまり、駆動状態にあるカメラ部から電源が投入されていないカメラ部へスイッチを切り替える場合、スイッチを切り替えるとほぼ同時に、画像を映し出そうとすると、スイッチ切替えと同時にカメラ部に電源を投入するため、被写体の反射光量すなわち、カメラ部への入射光量は調整されていない状態であるので過大入射または、過少入射光量になり映像画面が乱れていた。また、全てのカメラに通電しておくのでは画像の乱れは生じないが必要以上の電力を消費する問題がある。

【0011】本発明はこのような従来の問題点に鑑みてなされたものであって、モニタを1台で表示させ、かつ消費電力を削減するとともに画像の乱れをなくして画像

の切替えをする車載カメラを提供することを目的とする。

【0012】

【課題を解決するための手段】この目的を達成するために本発明のカメラ駆動装置は、固体撮像素子を駆動する水平・垂直タイミング回路と、前記固体撮像素子の出力信号により前記固体撮像素子に入射する光量を判断する電子アイリス制御回路と、前記電子アイリス制御回路の出力信号に応じてシャッタースピードを制御することで前記固体撮像素子に入射する光量を制御するシャッタースピードコントロール部と、前記固体撮像素子の出力信号を一時記憶するサンプリング・ホールド回路とを有するカメラ部を複数有し、この複数のカメラ部の出力信号のうち一方の出力信号を選択する切替え回路と、この切替え回路の出力信号を表示装置に表示できるように処理する信号処理回路と、この信号処理回路の出力信号を表示する表示装置とを備え、カメラを使用する期間、前記固体撮像素子と、前記水平・垂直タイミング回路と、前記電子アイリス制御回路と、前記シャッタースピードコントロール部とは常に電圧を供給し、前記サンプリング・ホールド回路にはこのサンプリング・ホールド回路が備えられているカメラ部が前記切替え回路により選択された時のみ電圧を供給する構成とした。

【0013】

【作用】このような構成によりモニタ 1 台に複数のカメラ部を接続してもカメラ部を切替え際に光量の調整不良により生じる画像の乱れを防止することができる。

【0014】

【実施例】以下、本発明の一実施例について図面を参照しながら説明する。なお、従来例と同じ構成については同じ符号を記し、説明は省略する。

【0015】図 1 において固体撮像素子 11、21、水平・垂直タイミング回路 12、22、電子アイリス制御回路 13、23、シャッタースピードコントロール部 14、24 には常に電圧が供給されている。

【0016】また、切替え回路 3 はサンプリング・ホールド回路 15、25 のいずれか一方の出力信号を選択するとともに選択されたサンプリング・ホールド回路にのみ電圧を供給するように構成されている。以上のような構成において、以下その動作を説明する。

【0017】まず、水平・垂直タイミング回路 12、22 の出力信号により固体撮像素子 11、21 は、被写体の反射光を取り込み、この光量に対応した電荷の量に変換しこれを出力信号とする。この変換された電荷の量を電子アイリス制御回路 13、23 が電圧に変換してその電圧により被写体の反射光量を判断する。電子アイリス制御回路 13、23 が被写体の光量を多いと判断したときは、固体撮像素子 11、21 の蓄積電荷が最適量になるように余分な電荷を廃棄し、これを出力信号とする。この廃棄された電荷を電子アイリス制御回路 13、23

が光量を判断した信号としてシャッタースピードコントロール部 14、24 に入力し、電子シャッタースピードを変えて、最適光量状態にする。

【0018】このように電子アイリス制御回路によって被写体の反射光量を調整して正常な映像にしている。

【0019】ここで、カメラの固体撮像素子を駆動する水平・垂直タイミング回路と、電子アイリス制御回路と、シャッタースピードコントロール部とは通電されているので、常にカメラ部への入射光量が調整されておりカメラ切替え時に生じる光量の調整不足による画像の乱れを防止することができる。

【0020】このように複数のカメラ、例えば 2 台のカメラとすると、第 1 のカメラ部 1 と第 2 のカメラ部 2 の各々の固体撮像素子 11、21 と、固体撮像素子 11、21 を駆動する水平・垂直タイミング回路 12、22 と、固体撮像素子 11、21 の出力から光量を判断し電子シャッターを制御する信号を出力する電子アイリス制御回路 13、23 と、電子アイリス制御回路 13、23 の出力で固体撮像素子 11、21 のシャッタースピードをコントロールするシャッタースピードコントロール回路を含むシャッタースピードコントロール部、14、24 に常に電源を投入しておくことにより第 1 のカメラ部 1 と第 2 のカメラ部 2 の入射光量は常に調整されているので切替えまたは、カメラ映像を出力するための電源投入による映像画面の乱れがなくなり、車載カメラの画像乱れ防止装置が得られる。

【0021】なお、図 2 に示すように電子アイリス制御回路に代えて固体撮像素子 11 の出力から光量を判断し機械式シャッターを制御する信号を出力するメカニカルアイリス制御回路 13 と、シャッタースピードコントロール部に代えてメカニカルアイリス制御回路の出力で固体撮像素子 11 のシャッタースピードをコントロールするメカニカルアイリス駆動部としても同様の効果を得られる。

【0022】

【発明の効果】以上説明したように本発明によれば、車両の後方を確認するときなどの車載カメラシステムに電源が投入されたときにも、第 1 のカメラから第 2 のカメラに切替えられたときにも入射光量調整不具合による画像の乱れは生じない。

【0023】従って、映像による不快感を解消し、映像をすぐに映し出せることにより次の行動をすぐにとることができる。また、車載カメラシステムの一部のみにしか通電していないため消費電力も少なく済む。

【図面の簡単な説明】

【図 1】本発明の一実施例におけるカメラ装置の構成図

【図 2】本発明の一実施例におけるカメラ装置の構成図

【図 3】従来の車載カメラの構成図

【図 4】従来のカメラ装置の構成図

【図 5】従来のカメラ装置の構成図

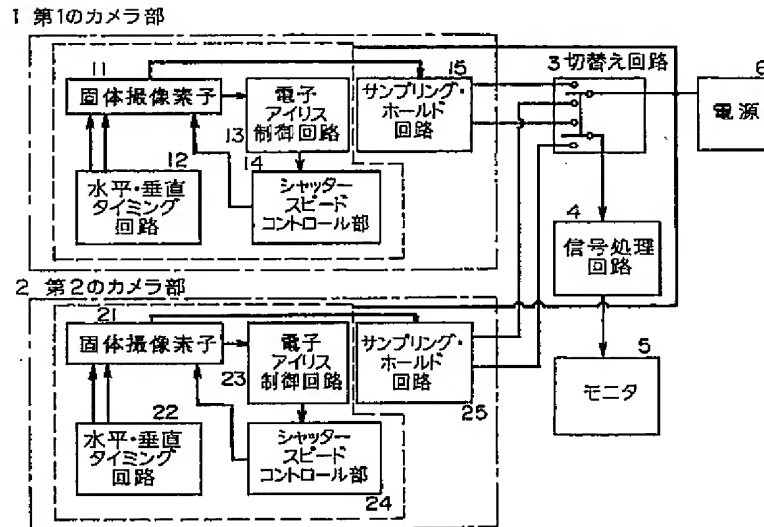
【符号の説明】

- 1 第1のカメラ部
2 第2のカメラ部
3 切替え回路
4 信号処理回路
5 モニタ

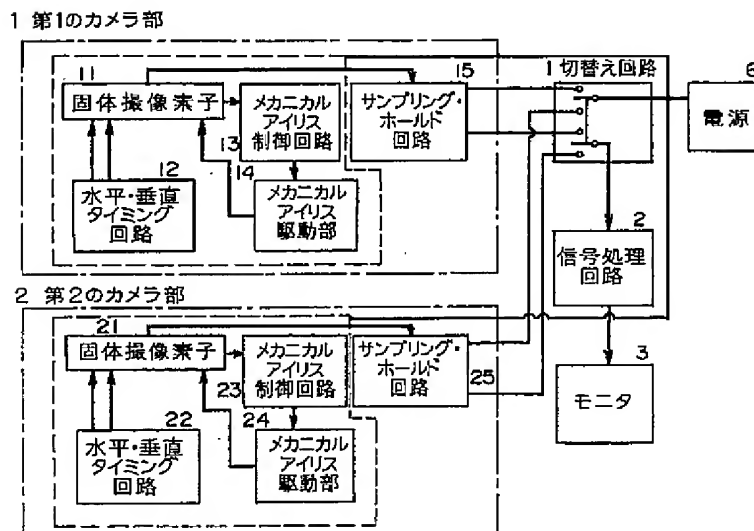
- * 11、21 固体撮像素子
12、22 水平・垂直タイミング回路
13、23 電子アイリス制御回路
14、24 シャッター速度コントロール部
15、25 サンプルング・ホールド回路

*

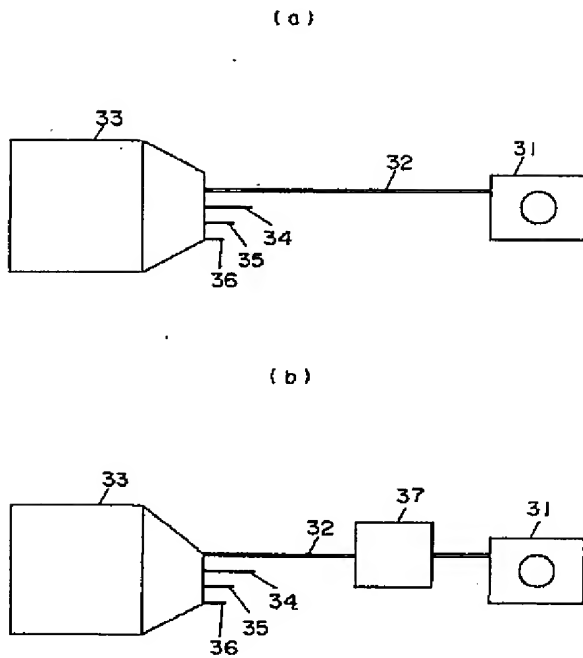
【図1】



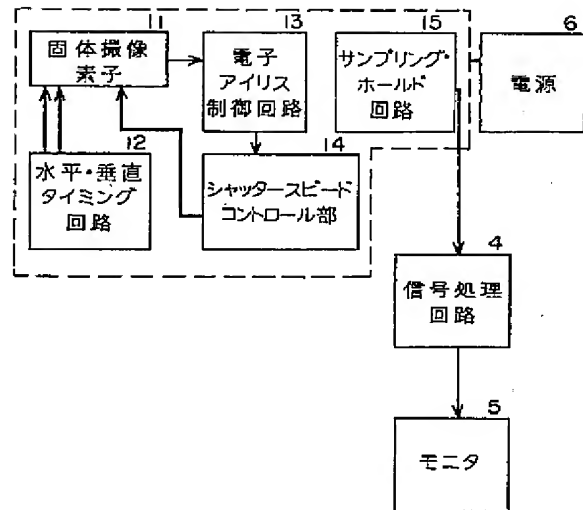
【図2】



【図3】



【図4】



【図5】

